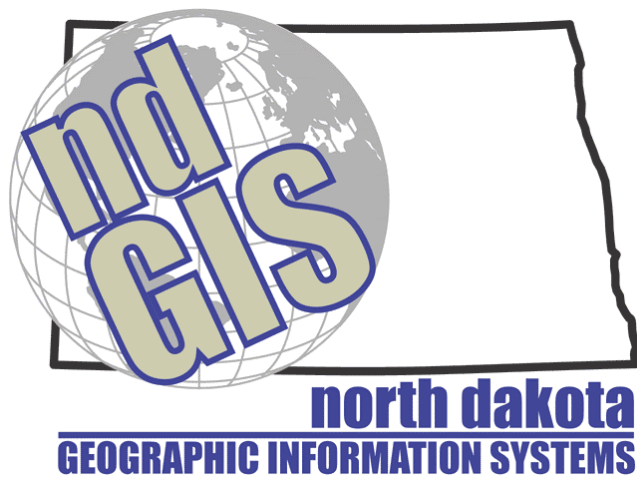


State of North Dakota

GIS Program Strategic Plan – 2015-2017



Prepared By: Bob Nutsch
GIS Coordinator
Information Technology Department

Approved By: North Dakota GIS Technical Committee

Date of Publication: July 27, 2015

Contents

1. EXECUTIVE SUMMARY	3
1.1 Overview	3
1.2 Business Case.....	3
1.3 Strategic Goals	3
1.4 Key Recommendations	3
2. CURRENT SITUATION.....	4
2.1 Mission Statement.....	4
2.2 Business Case for the GIS Program.....	4
2.3 Who We Are	5
2.4 Where are we now?.....	5
2.4.1 GIS Hub	5
2.4.2 Coordination	6
2.4.3 Key Data Sets.....	7
2.4.4 Strengths	7
2.4.5 Challenges.....	8
2.4.6 Opportunities.....	9
2.4.7 Threats.....	10
3. VISION AND GOALS	10
3.1 Vision Statement.....	10
3.2 Strategic Goals and Objectives	10
4. REQUIREMENTS.....	12
4.1 Executive Support and Education.....	12
4.2 Budget	12
4.3 Coordination and Oversight.....	12
4.4 Staffing.....	13
4.5 Outreach.....	13
5. APPENDICES	13
5.1 Development of the Plan.....	13
5.2 History.....	13
5.3 Future Work	14
5.4 List of Acronyms	15

1. EXECUTIVE SUMMARY

1.1 Overview

The GIS Program is driven by the North Dakota GIS Technical Committee (GISTC) with the focus of the work being the development and maintenance of the GIS Hub which is funded by the North Dakota Legislature and is the foundation of the GIS Program. The GIS Hub is a database and web infrastructure which supports state agency GIS and is used to disseminate geospatial data to other levels of government and to the public.

In addition to the continued operation and development of the GIS Hub, the GISTC provides the coordination for state agency GIS activities, data development, and interaction with local and federal government.

1.2 Business Case

Key drivers include

- Efficient delivery of geospatial data resulting in cost savings and protection of property and lives.
- Reduced project start-up costs due to the existing infrastructure and data provided by the GIS Hub lowers the barriers to utilization of these geospatial technologies.

1.3 Strategic Goals

The following strategic goals have been identified by the GISTC to implement its vision and achieve its mission:

<i>Strategic Goal #1 – Enhance and develop GIS data</i>
Improve existing data sets, and after identifying desired data sets, develop plans to acquire that data.
<i>Strategic Goal #2 – Improve Statewide GIS coordination</i>
Streamline the flow of data, ideas, activities, standards, technology, training, and priorities at all levels of government, the academic sector, the private sector, and the public.
<i>Strategic Goal #3 – Improve GIS systems</i>
Provide enhanced means of distributing vector and raster data through the GIS Hub while improving reliability and access.

1.4 Key Recommendations

- Sufficient staffing for the support and development is required for growth and maintenance of the GIS Hub

- Greater coordination, primarily data development and knowledge transfer, could be accomplished if North Dakota had a State GIS Coordination Council.

2. CURRENT SITUATION

2.1 Mission Statement

The State of North Dakota's GIS Hub will provide the essential infrastructure to share core geographic datasets through an accessible data warehouse among stakeholders with browsing ability to the general public. The Hub will leverage the State's existing data, infrastructure and expertise to implement the core elements of this enterprise solution.

2.2 Business Case for the GIS Program

Geographic information is critical in emergency preparation and mitigation and is becoming more important in other business systems. Two key drivers for the GIS Program at the State of North Dakota are:

1. Efficient delivery of geospatial data resulting in cost savings and protection of property and lives. Some examples are:
 - The Abandoned Mine Lands Division of the Public Service Commission uses GIS as a tool in their mission to eliminate potential or existing hazards associated with abandoned surface and underground coal mines. GIS datasets commonly used are aerial imagery, state, county & corporate boundaries, roads, and elevation.
 - GIS is used by the Public Service Commission's Reclamation Division during the review and technical analysis of mining permits, for tracking the progress of mining and reclamation activities, and during mine-site compliance inspections, including enforcement actions.
 - GIS is used throughout the Oil and Gas Division of the Industrial Commission for permitting tasks, day to day map generation, as well as general office uses. GIS is one of the most highly requested resources the Oil and Gas Division offers to the public in the form of maps and oil and gas data.
 - Locations of workforce lodging related to oil and gas development in western North Dakota are extracted from a database managed by the Food and Lodging Division of the Department of Health and combined with data from counties and cities to create a dataset that is publicly available. The primary use of this data is to help ensure the safety of the residents of the workforce lodging establishments located outside of city limits, being able to provide advanced warning of severe weather conditions for residents, minimize crime and provide safe drinking water.
2. Reduced project start-up costs due to the existing infrastructure and data provided by the GIS Hub lowers the barriers to utilization of these geospatial technologies. Some examples are:

- The GIS Hub provides consistent spatial information between state agencies that deal with the same resource. For example, the Department of Health has regulatory authority over the water quality of the state. The State Water Commission has regulatory authority of the water quantity of the state. Engineers, Scientists and Hydrologists in both agencies know that they are using the same data when using streams, lakes, water resource districts, and watershed boundary data from the GIS Hub.
- At the Department of Health, the Environmental Health's Section's "Facility Profiler" pulls data from the GIS Hub and provides a means to spatially query facilities that have an environmental concern such as a release, a permit, a notice of violation or are otherwise regulated by the Department. Data layers from the Hub, including county boundary, watershed, political subdivision, public health unit, and ecoregion are queried nightly to populate fields for new facilities added to program databases. Without the GIS Hub data layers, staff would spend valuable time doing simple data entry to the Facility Profiler tool.

2.3 Who We Are

Role of the GISTC: The GIS Technical Committee (GISTC) was established by Executive Order 2001-06. The primary role of the GISTC is to service the GIS Hub and provide a collaborative environment that supports state agencies' GIS. A secondary role is to coordinate among federal, state, tribal, local government and the private sector. The GISTC also acts as an advisory group for mentoring state agencies implementing/investing in GIS.

Role of the state agencies: State agencies utilize and develop GIS in support of their unique and mandated business needs and objectives. Agencies as a whole provide a supporting role to the GISTC and to the GIS Hub in developing and sharing their data.

Role of the GIS Hub: The GIS Hub supports state agencies in the development of their GIS and the dissemination of common interest data to other levels of government and the public.

2.4 Where are we now?

2.4.1 GIS Hub

The core of the GIS Program is the GIS Hub. The GIS Hub is an infrastructure comprised of geospatial data storage, data services, and application interfaces. This infrastructure accommodates generic and agency-specific uses. The GIS Hub databases contain general purpose and agency-specific GIS data. The data services include but are not limited to Esri-format and OGC-standard format. General purpose GIS applications sponsored by the GISTC are used to allow other levels of government and the public to access GIS Hub data.

Data on the GIS Hub can originate from local, state, tribal, and federal sources. Of the more than 270 layers on the GIS Hub, each one is assigned a data steward. Data stewards are responsible for maintaining the data locally and ensuring it is loaded onto the GIS Hub. Before loading the

data into production, the Data Oversight Committee, a sub-committee of the GISTC, reviews the data.

2.4.2 Coordination

In 2004 the National States Geographic Information Council (NSGIC) released a set of criteria for effective statewide GIS coordination. These criteria are part of the Fifty States Initiative (<http://www.nsgic.org/fifty-states-initiative>)

NSGIC Criteria	ND Status	ND Status Description
1. A full-time, paid coordinator position is designated and has the authority to implement the state's business and strategic plans.	Completely in Place	A GIS Coordinator position is within the Information Technology Department
2. A clearly defined authority exists for statewide coordination of geospatial information technologies and data production.	Completely in Place	The GIS Technical Committee is established by Executive Order 1995-05
3. The statewide coordination office has a formal relationship with the state's Chief Information Office (CIO).	Completely in Place	The GIS Technical Committee is chaired by the GIS Coordinator who reports indirectly to the CIO
4. A champion (politician or executive decision-maker) is aware and involved in the process of geospatial coordination.	Completely in Place	The CIO fills this role; the CIO oversees the Information Technology Department budget which includes the GIS Program
5. Responsibilities for developing the National Spatial Data Infrastructure (NSDI) and a State Clearinghouse are assigned.	Completely in Place	Data stewards have been established; the GIS Hub is used to distribute data.
6. The ability exists to work and coordinate with local governments , academia, and the private sector.	Completely in Place	This is in place informally and more formally, is in place via the Full GIS Technical Committee
7. Sustainable funding sources exist to meet project needs.	Completely in Place	General Funds are appropriated by the Legislature and are managed by the GIS Technical Committee, the GIS Coordinator, and the Information Technology Department
8. GIS Coordinators have the authority to enter into contracts and become capable of receiving and expending funds.	Completely in Place	Acting with and/or under the authority of the Information Technology Department, the GIS Coordinator has this authority
9. The Federal government works through the statewide coordinating authority.	Completely in Place	This is done via the USGS Liaison, working with the GIS Technical Committee and the GIS Coordinator

2.4.3 Key Data Sets

A set of core or “framework” layers provide a means to identify key datasets that are present or are lacking in North Dakota. The majority of these framework layers are part of the National Spatial Data Infrastructure (NSDI) framework (<http://www.fgdc.gov/framework>).

Statewide Framework Layer	ND Status Description (Non-existent=Red; Incomplete=Yellow; Complete=Green)
Geodetic Control	This data exists within a state agency and is not yet available via the GIS Hub
Cadastral (parcels)	This is present within some cities and counties
Orthoimagery	Local, regional, and statewide imagery data exist. Pixel resolution ranges from 3 inches to 2 meters.
Elevation	Local, regional, and statewide elevation data exist. Nearly 3/4 of the state is covered by LiDAR
Hydrography	24K and 250K hydrography is available statewide
Administration Units	This includes PLSS, cities, counties, fire districts, legislative districts, water districts, and others
Transportation	Statewide road, railroad, and airport data exists with data sources from local, state, and federal agencies.
Structures	School locations are available; hospital, fire stations, and other data is available internally. Address point data is being collected by the Department of Emergency Services. This work will be completed in late 2015.
Land Use	Landuse/Landcover data from the USGS, FWS, and USDA is present

2.4.4 Strengths

Small group of dedicated individuals working well together

- The GIS Program is driven by the GIS Technical Committee (GISTC)
- The GISTC meets on a monthly basis, rotating the meeting locations between each of the agencies
- GIS expertise at the state agencies are shared at these meetings and is used to help develop and manage the GIS Hub and its data holdings

The GIS Hub utilizes existing infrastructure

- The Information Technology Department (ITD) hosts the GIS Hub infrastructure
- ITD provides hosting services and system administration

Good ties to non-state agencies

- Through the GISTC, we have ties to industry, academia, other levels of government, and other states

Legislative Support

- General funding from the Legislature is used to maintain and develop the GIS Hub

- GIS Hub funding is part of the ITD budget

2.4.5 Challenges

Continued and Expanded Funding

- Data development
- Increasing and maintaining GIS Hub reliability and functionality

Hosting Fees

- Large improvements to data storage rates have occurred over the past two bienniums but cost pressure remains. Server hosting fees are becoming a larger cost item.

Application Replacement and Updates

- Sufficient resources for application development, including replacement of aging tools and researching new tools and methods are required to remain in step with new technology and newer software versions
- Some agencies may be unable to fund timely replacement of their web and desktop applications which in turn creates the pressure to maintain older technology on the GIS Hub
- Some agency business functions rely on third-party extensions that need to be upgraded by the third party provider. These schedules are beyond the control of the agency and the GISTC. However, since many of these types of third-party extensions are essential to agency business operations, they may delay the update of the GIS Hub to the latest version

People Resources

- Individuals from state agencies contribute their time and expertise in data and other activities associated with the GIS Program which can conflict with their primary agency-related work duties. As a result, GISTC schedules can be impacted.
- The timely development and maintenance of GIS Hub systems are constrained by staff levels; additional funding is required for an FTE or contractor.

Awareness and Utilization

- Many state agencies have data that could be placed into a GIS to provide them immediate benefit but they are not aware of that and/or lack the resources to utilize GIS
- At all levels of government within North Dakota there are “have” and “have not” agencies in terms of GIS knowledge and resources

Statewide Coordination

- The adoption and use of common standards, up-to-date training, and the development of statewide projects, and counties just starting out with GIS would benefit with statewide county coordination.
- Local and tribal governments play a key role in statewide data collection efforts. Issues that are related to these efforts such as standards, maintenance, compilation, and work flow need to be resolved using the limited financial and people resources available.

2.4.6 Opportunities

Marketing our Services

- With the increasing availability and types of web services (including ArcGIS Online) improvements are required to make it easier to find the GIS Hub data and services and make more people aware of them
- Work with state agencies and their data to help them become aware of how GIS can be of assistance to their programs and business needs

Technology

- Commercial and open source solutions are increasing in availability and functionality. These systems need to be utilized wherever it provides more functionality to the user and reduces cost to the GIS Program.
- The demand for mobile GIS by consumers of data services and maps is increasing. ArcGIS Online will meet some of this demand; the GIS Program and agencies need to be aware of this tool, its capabilities, and its possible use in meeting the demand for mobile GIS.
- Unmanned Aircraft Systems (UAS) – The use of unmanned aircraft by vendors and state agencies will continue to grow. The GISTC should take an active role in assisting in the development of data standards, equipment utilization, training, and governance.

Data

- The Department of Emergency Services (DES) is developing an emergency services dataset with completion slated for late 2015. Their “seamless base map” project will include road centerlines and address points derived from aerial photography. This project will provide an opportunity for the state to work with local government in the development and maintenance of this data. The road centerline and address point data will prove to be very useful in supporting multiple state agencies.
- The state has no statewide parcel dataset. Such a dataset would greatly benefit economic development and public safety. Lessons learned in the development and maintenance of the road centerlines and address points will be applicable to the development of a parcel dataset. The state through the GISTC could provide a vision for the development and maintenance of a parcel dataset while recognizing and other concerns that local government may have. A state champion needs to be identified for this dataset if it is to become a future project.
- The state should work more closely with local and tribal government to define priority areas, update frequency, and funding mechanisms for high-resolution aerial imagery. Several cities and counties have been very generous working with the state to share their data; more of this sharing may be possible if the state through the GISTC were to take a more active role.
- North Dakota is one of many states that are reliant upon the National Agriculture Imagery Program (NAIP). This aerial photography data is extremely useful and very popular with GIS users across the state. Future NAIP collections may require collaboration from all levels of government and the private sector to acquire this data and/or obtain upgraded products.

2.4.7 Threats

Increasing Costs

- This is the increase in hosting and service fees charged to the GIS Program
- Of the hosting fees, storage is the primary cost leader followed by server hosting fees

Flat or Declining Budget

- A hold-even or reduced budget, with or without rising costs, will have a number of impacts including removing the ability to store data that perhaps we could otherwise afford to purchase.

3. VISION AND GOALS

3.1 Vision Statement

It is the vision of the GISTC that the GIS Program will continue to grow in value to state agencies and other levels of government which in turn increases the level of service and cost effectiveness to the citizens of the North Dakota. The core of the GIS Program is the GIS Hub which will continue to develop through a focus on improved and new data sets and secondarily, through improved and new functionality and applications.

3.2 Strategic Goals and Objectives

The following strategic goals have been identified by the GISTC to implement its vision and achieve its mission:

<i>Strategic Goal #1 – Enhance and Develop GIS Data</i>	
Improve existing data sets, and after identifying desired data sets, develop plans to acquire new data.	
Programmatic Goals	Objectives
1. Improve and enhance existing data sets	a) Identify and move raster datasets that can be moved from SDE to Image Server so that there is just one location for raster data.
2. Establish key data development needs	a) Work with local and regional data stewards to acquire local and regional high-resolution aerial photography b) Identify funding sources, stewardship, and development strategy for parcels.

<i>Strategic Goal #2 – Improve Statewide GIS Coordination</i>	
Streamline the flow of data, ideas, activities, standards, technology, training, and priorities within the state at all levels of government, the academic sector, the private sector, and the public.	
Programmatic Goals	Objectives

1. Provide Outreach	a) Grow the GIS Users Conference by increasing involvement of Higher Education and the private sector; move the location on a rotating basis
2. Improve Communication	a) Increase awareness and use of the NDGIS listserv and NDGIS Twitter and blog
3. Promote and Establish GIS Training	a) Continue bringing in instructors for seminars, workshops, and formal training
4. Develop and Promote Standards and Guidelines	a) As needed, develop and promote guidelines to assist in sharing of data and to serve as a guide for new projects b) As needed, develop, establish, and promote standards such as those for address, road centerline, parcels, and geospatial reference, utilizing national standards

<i>Strategic Goal #3 – Improve GIS Systems</i>	
Provide enhanced means of distributing vector and raster data through the GIS Hub while improving reliability and access.	
Programmatic Goals	Objectives
1. Enhance State Agency Access to Data	a) Improve processes and workflow that allow agency data stewards to directly manage their public data while avoiding the enterprise geodatabase feature class locking problems and avoiding interruptions to web services b) Provide access to the GIS Hub data services tier to allow designated agency GIS coordinators to create, stop, start, and delete their own data services.
2. Investigate use of alternative geospatial technologies	a) Continue to monitor the development and applicability of open source and alternative commercial server and desktop tools and their applicability to state government
3. Improve GIS Hub Reliability and Access	a) Upgrade the Hub Data Portal software for increased functionality, mobile access, and support b) Convert all remaining 3-tier ArcSDE connections to 2-tier for project files and for applications in anticipation of the ArcSDE application server disappearing after 10.2 c) Develop database future state plan, e.g., move to either shared Oracle or shared SQL Server. This will include the use of Active Directory and assist in improving 2-tier connection speed when using VPN d) Continue to monitor the development and applicability of cloud-based servers, software, and data
4. Enhance Disaster Recovery	a) Define critical applications and data sets and verify if the supporting systems are sufficient b) Develop GIS Hub support redundancy so that in the event the GIS Coordinator is not available daily operations and support are minimally impacted. c) Complete service level objectives for database and web services. This includes disaster recovery.

4. REQUIREMENTS

4.1 Executive Support and Education

One of the key needs of the GIS Program is budgetary support at the highest levels of state government. Therefore, the GISTC and the GIS Coordinator need to provide educational opportunities for agency executives and elected officials to help them learn what the GIS Program has done for their agency and the state, and the value of GIS in general. The GISTC should provide an “Executive GIS Update” for department heads and elected officials prior to entering a legislative session.

4.2 Budget

The GIS Program budget supports the goals and activities as set forth by the GISTC. This budget supports both on-going operational expenses such as the fees paid to ITD for hosting services (servers, storage, applications), for basic maintenance activities, and for annual licensing fees paid to vendors. The budget also supports one-time implementation costs such as the purchase of new software, development of new applications, and data development.

The data development line item in the budget is restricted to purchasing or developing relatively inexpensive data sets that will have wide-spread use amongst the state agencies. As much as possible, data development funds are expended in association with other contributors in order to maximize state dollars.

2013-2015		2015-2017	
Requested ¹	Appropriated ^{2,3}	Requested ^{1,4}	Appropriated ²
\$1,619,007	\$1,394,997	\$1,182,821	\$1,196,338

¹Initial budget request to Office of Management and Budget (OMB)

²Appropriated by the legislature

³Includes one-time funding for a special project

⁴Agencies were told to submit a hold-even budget with optional items; funding for an FTE was submitted as an optional but was not accepted and is not included

4.3 Coordination and Oversight

The GIS Coordinator, as a member and chair of the GISTC is responsible for balancing the needs of the GISTC and the individual GISTC member agencies. Statewide needs brought to the attention of the GISTC also need to be considered and included in the work done by the GISTC. It is important that the various needs are met while providing the autonomy needed by state agencies in order that they can accomplish their primary missions.

GIS users around the state have ample opportunity to exchange ideas and share information via the NDGIS listserv, Twitter, a blog, the annual Full GISTC meeting, and the biennial NDGIS Users Conference. Greater coordination, primarily data development and knowledge transfer, could be accomplished if North Dakota had a State GIS Coordination Council.

4.4 Staffing

Sufficient staffing for the support and development is required for optimal growth of the GIS Hub. An additional person would improve response time to agency requests for application maintenance and development, conduct research and development on new or evolving GIS technologies, implement GIS Hub upgrades, and load new and updated data. If it is not possible to obtain additional people resources, the State's Information Technology Professional Services Contract Pool will be used as a basic means to grow and maintain the GIS Hub, particularly in the support of day-to-day operations.

4.5 Outreach

In addition to assisting in the development of workshops, classes, and seminars, the GISTC needs to promote the GIS Hub and how it can be utilized throughout the state. Training and increasing the awareness of the GIS Hub consists of two primary components: 1) finding and using the GIS Hub data services and 2) utilizing the GIS Hub as a means for finding and utilizing statewide data hosted elsewhere.

5. APPENDICES

5.1 Development of the Plan

The State GIS Coordinator developed this Strategic Plan in conjunction with the North Dakota GIS Technical Committee (GISTC).

5.2 History

In mid-January 2000, North Dakota's Chief Information Officer (CIO) was contacted by two representatives from the GISTC asking that ITD study the need for a centralized GIS hosting service for North Dakota state agencies and their partners. The GIS Hub would provide a means of sharing the GIS information being stored locally at each agency. The CIO agreed that GIS is an important technology for state government and that ITD should take a lead role in GIS.

ITD retained a consulting firm to study how GIS was used in state government. The report's findings were presented to the GISTC, the Director of Office and Management and Budget, the Governor's Chief of Staff, and the Legislative IT Committee. At the request of the GISTC, the CIO agreed to request funding from the Legislature to fund the GIS Program. In April 2001 the

Legislature provided funding to construct the GIS Hub, a database and web infrastructure hosted by ITD for hosting and sharing state agency GIS data.

5.3 Future Work

The items listed here are recognized by the GISTC as tasks to be worked on in the future, beyond 2015-2017.

<i>FUTURE Strategic Goal #1 – Enhance and Develop GIS Data</i>	
Improve existing data sets, and after identifying desired data sets, develop plans to acquire new data.	
Programmatic Goals	Objectives
1. Improve and enhance existing data sets	a) Review & prioritize framework data sets to be improved or developed including the strategy for maintenance and funding b) Identify GIS datasets and data stewards that reside in non-GISTC agencies c) Complete the conversion of metadata from FGDC to ISO
<i>FUTURE Strategic Goal #2 – Improve Statewide GIS Coordination</i>	
Streamline the flow of data, ideas, activities, standards, technology, training, and priorities within the state at all levels of government, the academic sector, the private sector, and the public.	
Programmatic Goals	Objectives
1. Provide Outreach	a) Explore the development of Memorandums of Understanding with local and federal government entities regarding data sharing and development b) Explore the benefits of developing and implementing a statewide GIS coordination model
2. Improve Communication	a) Provide updates to the State Information Technology Advisory Committee (SITAC)
3. Promote and Establish GIS Training	a) Conduct workshops on the use of GIS Hub services and resources b) Foster awareness of GIS being a critical information asset to state agency leadership
<i>FUTURE Strategic Goal #3 – Improve GIS Systems</i>	
Provide enhanced means of distributing vector and raster data through the GIS Hub while improving reliability and access.	
Programmatic Goals	Objectives
1. Enhance State Agency Access to Data	a) Develop and utilize as needed replication for sharing data between agencies and the GIS Hub b) Allow database authentication via Active Directory services.
2. Enhance Disaster Recovery	a) Publish service level objectives for managing expectations of disaster recovery

5.4 List of Acronyms

API – Application Programming Interface is a description of how data and information is stored in memory so that one computer system can interact with another.

ArcGIS Server – Esri web services server: software that delivers maps and information through the Web

ArcSDE – Esri Spatial Database Engine: software used to access spatial data stored in a relational database management system

Esri – Environmental Systems Research Institute: a software company based in Redlands, California which produces commercial GIS software, commonly known as ArcGIS.

FGDC – Federal Geographic Data Committee: responsible for coordinating the development, use, sharing, and dissemination of geospatial data across the nation

FME – Feature Manipulation Engine: Server software used by the GIS Hub for data downloading, produced by Safe Software.

FTE – Full time employee

GIS – Geographic Information System: computer-based system used to manage and integrate spatial data, maps are a common by-product

GISTC – North Dakota GIS Technical Committee: consists of eleven state agencies acting as a clearinghouse of state GIS activities and responsible for disseminating spatial data

ITD – North Dakota Information Technology Department

NAIP – National Agriculture Imagery Program: the program is administered through the Aerial Photography Field Office of the US Department of Agriculture (USDA) Farm Service Agency. NAIP imagery is intended to support USDA agriculture management programs.

NSDI – National Spatial Data Infrastructure: technologies and policies used to promote sharing of geospatial data throughout government, administered by the FGDC

NSGIC – National States Geographic Information Council: national organization of states with a goal of efficient and effective government through effective use of geospatial information technologies

OGC – Open Geospatial Consortium: non-profit organization which leads the development of standards for geospatial and location-based services.

PLSS – Public Land Survey System: method for subdividing and describing land in the US. Regulated by the US Department of the Interior's Bureau of Land Management

VPN – Virtual Private Network